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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/904,875	07/16/2001	Takamitsu Asanuma	110108	1757

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EXAMINER	
NGUYEN, TU MINH	
ART UNIT	PAPER NUMBER
3748	21

DATE MAILED: 08/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/904,875	Applicant(s) Asanuma et al.
	Examiner Tu M. Nguyen	Art Unit 3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Jul 18, 2003*.

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☒ Claim(s) *2-4* is/are allowed.

6) ☒ Claim(s) *1, 5, and 6* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☒ The proposed drawing correction filed on *Apr 30, 2002* is: a) ☒ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☒ All b) ☐ Some* c) ☐ None of:

1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. An Applicant's Amendment filed on July 18, 2003 have been entered.

Claims 1 and 5 have been amended. Overall, claims 1-6 are pending in this application.

Drawings

2. The amended drawings filed on April 30, 2002 have been approved for entry. Formal drawings with the approved changes are required in reply to this Office Action.

Claim Rejections - 35 U.S.C. § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seto et al. (Japan Publication 6-117221) in view of Maaseidvaag et al. (U.S. Patent 6,167,696).

Re claims 1 and 5, as shown in Figures 1 and 9 and indicated in the translated Abstract, Seto et al. disclose a device for purifying the exhaust gas of an internal combustion engine, comprising:

- a NOx absorbent (20) arranged in the exhaust system, which carries an oxidation catalyst (a NOx absorbing agent) for absorbing and reducing NOx, the catalyst absorbing NOx when the air-fuel ratio in the surrounding atmosphere thereof is lean and releasing the absorbed NOx when the air-fuel ratio is stoichiometric or rich;

- a catalytic apparatus (17) for purifying NOx arranged in the exhaust system upstream of the NOx absorbent, the catalytic apparatus carries a catalyst (a NOx absorbing agent) for absorbing NOx when the air-fuel ratio in the surrounding atmosphere thereof is lean and releasing the absorbed NOx when the air-fuel ratio is stoichiometric or rich; and

- control means (50, 11) for making the air-fuel ratio in the catalytic apparatus rich to release NOx therefrom and purify the released NOx by reduction.

Seto et al., however, fail to disclose that the NOx absorbent also has a function as a particulate filter.

As shown in Figures 1 and 4, Maaseidvaag et al. teach that it is conventional in the art to use an integral NOx/ particulate filter (22) which carries a catalyst (54) for absorbing and reducing NOx. As shown in Figure 4, the integral NOx/particulate filter is a wall-flow device comprising a partition wall (42) having pores, the partition wall carrying an oxidation catalyst (54) for absorbing and reducing NOx on the side surface and the pore surface thereof (see lines 33-39 of column 6). A controller in Maaseidvaag et al. makes the air-fuel ratio in the integral NOx/particulate filter rich to release NOx therefrom and to purify the released NOx by reduction, and to oxidize the particulates trapped on the filter. It would have been obvious to one having

ordinary skill in the art at the time of the invention was made, to have replaced the NOx absorbent in Seto et al. with the integral NOx/particulate filter taught by Maaseidvaag et al., since the use thereof would have provided an effective means to eliminate soot from the exhaust gas of internal combustion engines.

Re claim 6, in the modified device of Seto et al., the integral NOx/particulate filter carries an oxygen absorbing agent (a precious metal or an alkaline metal in the catalyst (54) of Maaseidvaag et al. is known as an oxygen absorbing agent).

Allowable Subject Matter

5. Claims 2-4 are allowed.

Response to Arguments

6. Applicant's arguments with respect to the references applied in the previous Office Action have been fully considered but they are not persuasive.

In response to applicant's argument that the combination of Seto et al. and Maaseidvaag et al. is improper because Maaseidvaag et al. fail to disclose a wall-flow particulate filter comprising a partition wall having pores; and that the partition wall carries a generic catalyst or an oxidation catalyst (pages 6-8 of Applicant's Amendment), the examiner respectfully disagrees. As clearly shown in Figure 4, the integral NOx/particulate filter (22) of Maaseidvaag et al. is wall-flow type filter (the arrows indicate the direction of the exhaust gas flow) comprising a partition

wall (42) having pores; and that the partition wall carries a generic catalyst or an oxidation catalyst (the washcoat (54) is a NOx absorbent comprising at least a precious metal as an oxidation catalyst and an alkali metal as a generic catalyst for absorbing NOx in the exhaust gas).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, applicant argues that the combination of Seto et al. and Maaseidvaag et al. is improper because the disclosed filter (22) in Maaseidvaag et al. is alleged to be "inferior" (i.e., during a lean operation, exhaust gas temperature is very low, degrading NOx absorption efficiency). Because of this, one with ordinary skill in the art would not replace an operational device of Seto et al. with an "inferior" filter of Maaseidvaag et al. (pages 8 and 9 of Applicant's Amendment). The examiner again respectfully disagrees with this line of argument. The examiner believes that the filter (22) in Maaseidvaag et al. is not at all "inferior". The problem of low NOx absorption efficiency during a lean operation is not unique to Maaseidvaag et al., but in fact, is a general problem for all NOx absorbents in existence. Therefore, the examiner believes that the filter (22) in Maaseidvaag et al. should perform well in purifying harmful NOx and soot emissions in the exhaust gas and thus, it would have been advantageous to replace the NOx absorbent in Seto et

al. with the filter of Maaseidvaag et al., since the use thereof would have provided an effective means to eliminate soot from the exhaust gas of internal combustion engines.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Communication

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (703) 308-2833.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (703) 308-2623. The fax phone number for this group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1148.

Tu M. Nguyen

TMN

August 24, 2003

Tu M. Nguyen

Patent Examiner

Art Unit 3748

Thomas Denion

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